



Proper Planning and Infrastructure for Electric Vehicles in your Building

By **Adrian Abramovic**



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Whether you are currently a supporter of electric vehicles (EVs), or not (who doesn't enjoy the sound of an internal combustion engine?), they are ever-increasing in popularity and will be a substantial percentage of the vehicles on the road in Ontario sooner than most people think. Currently, the zero-emission vehicles market share amounts to approximately 3.5% nationally, however only 2% in Ontario. In contrast, in BC and Quebec, it is around 10% and 7% market share, respectively.

With the federal government's national target of 10% EV market share by 2025, Ontario's anticipated rise in the number of electric vehicles requires that both residential and commercial condominiums are prepared. That means ensuring that proper planning and infrastructure are in place to serve

the current and future requirements of their owner's EV charging stations.

Plan for the Future

As most condominium corporations and property management firms are aware, as of May 1, 2018, revisions to the *Condominium Act, 1998*, were made to make it easier for corporations and owners to install EV charging stations. Following a formal request from an owner who provides proper documentation to the management to install an EV charging station, the board of directors has 60 days to give an informed response. This would include completing due diligence ahead of time.

Many condominiums lack the proper preparation and have random EV charging stations installed without a formal layout or plan for the future. Also, without clear guidelines in place, it is difficult to ensure that each owner's EV request has all the documentation required for

the board to make an informed decision. If owners are just allowed to connect EV charging stations to the nearest electrical service, there is a lack of metering, load management, and control. This has been observed in many condominiums and will cost more money to correct when EV demand increases.

A Two-Pronged Approach

For the benefit of the condominium corporation, property manager, and owners a two-pronged approach which provides a concise process and path for current and future EV charging growth is recommend. We have found this to be an excellent method in ensuring proper communication and correct EV charging installations.

- First are the Load Management Analysis and Central EV Design of the electrical system
- Second is an EV Installation Guideline for the owners/residents.

The first recommended item is for the board to hire a professional to review and analyze the current electrical loads and design of the building. All buildings have different loading and electrical character-

a central power panel, and specifically designed for the service of the EV charging stations. The condominium corporation would typically be responsible for the costs associated with the design and installation

maintenance, insurance, and warranties. Metering and billing are the responsibility of the owners. There are many professional sub-metering and smart-metering firms within the industry that are available to provide these services.

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istics depending on the building's age and original design. The analysis and report identify the building's current electrical loads and capacity, its overall EV charging stations potential and conceptual design.

An electrical engineer is required to design a central electrical infrastructure for the building and to determine where the current and future EV charging stations will be fed from. The design and installation may incorporate some visitor EV charging stations, however, the majority of the implementation is typically for the owners.

The standard design may include transformers, safety switches, power panels, smart multi-metering panels, and separate systems on different parking levels constructed in phases. Each building will be unique in its approach and construction. However, the importance and goal are to have a professional design and implementation plan, where all EV charging stations are fed and served from

of these electrical systems. The owners can install and connect their personal EV charging stations to the corporation-owned electrical systems at their own cost.

Communication is Key

To expedite the approval procedure and to keep all parties well informed, the second recommendation is to have an EV Installation Guideline for owners and residents prepared by a professional. This guideline clarifies the building-specific technical scope of work and documents required by the owners to install their EV charging stations to the satisfaction of the board. We have found this document to be extremely beneficial by addressing questions we have seen between parties. A legal review of the completed EV Installation Guideline is recommended.

The guideline may cover the approved locations for wiring and electrical equipment, owner's and contractor responsibilities, metering requirements,

Available Options

One option includes a central smart multi-metering power panel, which allows from 8 to 40 EV charging stations connected in one location to be individually metered. This system would require software and implementation from a metering company. However, all monthly fees and billing would be paid for and managed directly by each owner. Another popular option is each owner installing their own smart meter with load management software, then connecting this to the main central power panel.

A properly planned and executed electric vehicle charging station design in a condominium will ensure the longevity and overall value of the building. Being informed and knowing the recommended procedures and infrastructure to have in place in your building is crucial in preparing for the ever-changing landscape of the automobile industry. ■

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